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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/590,985 06/09/00 ALLCOCK

H 99-2127

EXAMINER

IM52/1023

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ART UNIT

PAPER NUMBER

1745

DATE MAILED: 2

10/23/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

## Office Action Summary

**Application No.**

09/590,985

**Applicant(s)**

allcock et al.

**Examiner**

Dah-Wei D. Yuan

**Art Unit**

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 11 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 7, 9, 10, 12 and 13 is/are rejected.
- 7) ☒ Claim(s) 5 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                 | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____   |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)        | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ | 6) <input type="checkbox"/> Other: _____                                    |

**PROTON CONDUCTING POLYMER MEMBRANES**

Examiner: Yuan      S.N. 09/590,985      Art Unit: 1745      October 21, 2001

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1,3,4,6,7,10,12,13 are rejected under 35 U.S.C. 102(e) as being anticipated by Formato et al. (US 6,248,469 B1).

Formato et al. teach a process of making a solid polymer electrolyte membrane that is used in a direct methanol fuel cell. The process involves the steps of preparing a mixture of a polymer substrate and an ion-conducting material in a common solvent and casting a solid membrane from the mixture. The preferred polymer substrates include polyester, polyvinyl, and polystyrene. The preferred solvents include tetrahydrofuran, sulfuric acid, phosphoric acid, chlorosulfonic acid and polyphosphoric acid (oxyacids) . The polymer substrate is first dissolve in the solvent followed by the drop-wise addition of the acid solution. The reaction is stopped by the additions of deionized water to the mixture. The membrane film is then cast on soda lime glass plate and left to stand in a dry box to remove the organic solvent. See Column 5, Lines 37-40; Column 7, Lines 23-28; Column 8, Lines 13-26; Examples 1 & 4 and Table 7.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2,9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Formato (US 6,248,469 B1).

The disclosure of Formato et al. differs from Applicant's claims in that Formato et al. do not specifically disclose the amounts of water added to the oxyacid-containing polymer solution. However, it could have been within the skill of the ordinary artisan to adjust the amounts of the water in the mixture depending upon desired reaction kinetics of the mixture. Where the general conditions of a claim are disclosed in the prior art it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 105 USPQ 233 (CCPA 1955); In re Swain et al., 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; Minnesota Mining and Mfg. Co. v. Coe, 69 App. D.C. 217 99 F.2d 986, 38 USPQ 213; Allen et al. v. Coe, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136. Moreover, Formato et al. cast the membrane film on a soda lime glass surface instead of a polytetrafluoroethylene surface. Glass and polytetrafluoroethylene are considered to be functionally equivalent. Therefore, it would have been obvious to one of ordinary skill in the art to substitute a polytetrafluoroethylene substrate for the soda lime glass in the process disclosed by Formato et al.

***Allowable Subject Matter***

5. Claims 5,8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 5 and 8 would be allowable because the closest prior art of record, Formato et al, does not disclose or suggest a method for making a proton conducting polymeric membrane by using a mixture of polyphosphazene and phosphorous oxychloride.

6. Claim 11 is allowed. The following is a statement of reasons for the indication of allowable subject matter: The invention of independent claim 11 recites a proton conducting polymeric membrane comprising a mixture of polyphosphazene and an oxyacid. The closest prior art of record, Formato et al, does not disclose or suggest a proton conducting polymeric membrane comprising polyphosphazene.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Rosenmeier et al. (US 5,789,106) teach the use of polyphosphazene and lithium salt to fabricate an ion-conductive polymer membrane.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (703) 308-0766. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gabrielle Brouillette can be reached on (703) 308-0756. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-2340.

Dah-Wei D. Yuan  
October 22, 2001

  
**CAROL CHANEY**  
**PRIMARY EXAMINER**